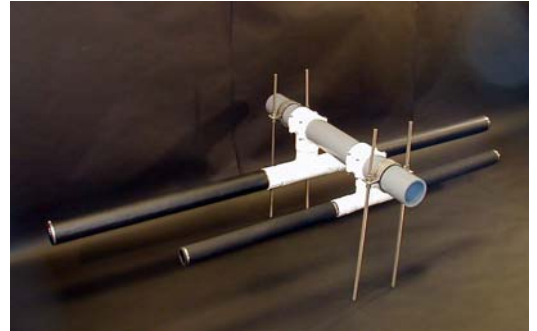


FINE BUBBLE AERATION SYSTEMS

“Elastomeric Membrane Units with Tideflex Check Valve Technology”

Elastomeric fine bubble membrane diffusers come in two basic types 1) circular disc domes (mounted on the top side of the manifold) and 2) duplex tubular style (mounted on the side or below the manifold). Fine Bubble Diffused Aeration Systems are still considered to be the most economical method of providing dissolved oxygen to a biological process. There are two primary considerations that should be applied to all elastomeric fine bubble systems 1) fine bubble systems produce very small bubbles with low rise rates and reduced energy, this optimizes their oxygen transfer ability but limits their mixing capacity and 2) the elastomeric membrane is designed to be economically replaceable, therefore it is susceptible to damage during its intended operational life; means should be provided to prevent any damaged membranes from adversely affecting the performance of the remaining units. Recognizing these two aspects is important in the selection of the type of fine bubble system to be applied to the process.



Mixing loops within any diffused aeration system begin at the discharge elevation of the air from the diffuser extend to the liquid surface then return to the emittance elevation; zones below this discharge elevation contain very low mixing velocities and solids tend to accumulate within these areas. Therefore, top mounted and side mounted diffuser assemblies are inherently susceptible to solids accumulation on the tank floor and with the limited mixing energy applied it is extremely difficult to re-suspend these solids. The Tideflex Fine Bubble Duplex Tubular Assemblies extend downward from the bottom side of the manifold and outward across the tank floor providing enhanced coverage area and influence upon the solids along the tank floor.

During normal operation, the Tideflex elastomeric tubular membrane provides a backflow seal against the support pipe when system airflow is discontinued. In the event a membrane becomes damaged and can no longer provide the seal it is critical to the continued operation of the system that the process fluid and biomass is prevented from flowing backward into the system and causing the remaining units to become clogged. Tideflex has incorporated its proved check valve backflow prevention technology within the internal housing of each



diffuser unit. This check valve becomes the fail-safe for the system and allows for continued system operation until the next scheduled maintenance cycle.

Unique Performance Features

- Internal Tideflex Check Valve
- Open Ended Design reduces unit buoyancy
- Automatic System Condensate Purging
- Full pipe diameter threaded connection
- Heavy Duty 150 psi Connection Saddles

Tideflex Technologies / Red Valve Company holds the patent for elastomer duckbill diffusers and their incorporation into a multiport diffuser piping system. Any suppliers of systems incorporating duckbill diffusers would need authorization from Tideflex Technologies / Red Valve Company. Soliciting of systems incorporating Tideflex diffusers by others without the consent of Tideflex Technologies constitutes intent to violate the patent protection of this product and is subject to the penalties defined within the Patent Protection Laws of the United States.

*US Patent No. 6,016,839 / 6,193,220 / 6,372,140 / 6,702,263
Canada Patent No. 2,366,252 / 2,385,902; United Kingdom Patent No. 2,326,603*